REMARKS

This Amendment is filed in response to the Office Action dated May 6, 2004, which has a shortened statutory period set to expire August 6, 2004.

Applicant appreciates the Examiner's indication of allowable subject matter, i.e. Claims 9-13, 31, 32, 38, and 39 are allowed.

Applicant respectfully traverses the rejection of Claims 1-8. Specifically, Claim 1 recites, "determining a frequency provided to power the CCFL circuit based on a duty cycle of a driving waveform to the CCFL circuit." Sasaki fails to disclose or suggest this limitation.

Sasaki teaches driving the piezoelectric transformer using the following steps:

> controlling the piezoelectric transformer by **switching an amplitude of the driving waveform into a small amplitude** and driving said piezoelectric transformer at a driving frequency less than a natural frequency, when the driving frequency reaches the proper driving frequency at which the driving waveform becomes a non-zero voltage switching state or becomes a waveform superimposed with higher harmonic wave, while the driving waveform is increased within a frequency range which is higher than the resonance frequency;
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> controlling the piezoelectric transformer by **switching the amplitude of the driving waveform into a large amplitude** and driving the piezoelectric transformer at a driving frequency higher than the proper driving frequency when the driving frequency reaches a predetermined frequency near the resonance frequency, while driving the piezoelectric transformer at the small amplitude and driving the piezoelectric transformer at higher frequency than the resonance frequency.

Col. 5, line 66 to Col. 6, line 17 (emphasis added).

Sasaki further teaches that:

> The [apparatus for driving the PZT transformer] provides a broad range of output voltages and the source voltage by applying not only the first control method which changes the boosting ratio of the piezoelectric transformer by controlling the driving frequency, but also the second control method for adjusting the amplitude of the driving waveform **by the use of a switching element connected to the DC power source for optionally switching between a non-control condition (control at the duty-ratio of 100%) in which the element is always turned on with reference to the natural frequency as a threshold value and a pulse width control condition to execute the on/off switching (control at a fixed duty-ratio of less than 100%).**

Col. 9, lines 4-16 (emphasis added).

Moreover, Sasaki teaches that:

> As described hereinabove, a characteristic curve is obtained as illustrated in FIG. 6A, which shows the relationship between the driving frequency of the piezoelectric transformer and the output voltage. In more detail, as seen in the figure, the maximum output voltage is obtained, when the driving frequency is the resonance frequency. Until the driving frequency reaches the natural frequency where the problem occurs, the driving frequency is increased by increasing the feedback output voltage by variably adjusting the resistance of the detection resistor 16; thereby the boosting ratio is decreased from that at the maximum output voltage. **When the driving frequency reaches the natural frequency (that is, when the hysteresis comparator 20 detects that the control voltage Vosc is the same as the first threshold value), the source control circuit 21 receives the output signal from the hysteresis comparator 20 and makes the switching element 22 switch into the duty-ratio of 50%...**
>
> It is also possible to change the output voltage from the lower voltage to the higher voltage in the opposite direction. In this case, contrary to the above operation, the source

> control circuit 21 variably adjusts the detection resistor 16 to reduce the driving frequency under a condition that the switching element is operated at the duty-ratio of 50%, and **when the driving frequency reaches a predetermined frequency which is slightly higher than the resonance frequency (that is, when the hysteresis comparator 20 detects that the control voltage Vosc is the same as the second as the second threshold value), the source control circuit 21 receives the output signal from the hysteresis comparator and switches the switching element 22 to the normally on state at the duty-ratio of 100%.** Thereby, since the power supply to the driving circuit increases and the amplitude of the driving wave increases as shown in FIG. 2B from the amplitude shown in FIG. 2D, the output voltage increases are detected and feedback controlled by the output voltage detection circuit 17, and the driving frequency increases to a frequency slightly lower than the natural frequency. At this high amplitude state, when the driving frequency is reduced until the driving frequency reaches a predetermined frequency which is slightly higher than the resonance frequency, the maximum output voltage is obtained. Consequently, it is possible to obtain any output voltage within a range extending from the minimum output voltage to the maximum output voltage.

Col. 15, lines 30-35 and 51-64 (emphasis added).

Thus, Sasaki teaches that the driving frequency determines which of two duty cycles (i.e. 50% or 100%) is used. This teaching is opposite that recited by Applicant. Specifically, Sasaki teaches nothing about <u>determining a frequency</u> provided to power the CCFL circuit <u>based on a duty cycle</u> of a driving waveform to the CCFL circuit.

Figures 1 and 7 of Sasaki, cited in the Office Action as teaching the limitations of Claim 1, show the source control circuit 21 that can provide a duty cycle of either 50% or 100%. However, these figures show nothing regarding determining a frequency provided to power the CCFL circuit based on a duty

cycle of a driving waveform to the CCFL circuit. The passage cited in the Office Action, i.e. Col. 15, line 3 to Col. 16, line 9, also fails to teach determining a frequency provided to power the CCFL circuit based on a duty cycle of a driving waveform to the CCFL circuit.

Because Sasaki fails to disclose or suggest determining a frequency provided to power the CCFL circuit based on a duty cycle of a driving waveform to the CCFL circuit, Applicant requests reconsideration and withdrawal of the rejection of Claim 1.

Claims 2-8 depend from Claim 1 and therefore are patentable for at least the reasons presented for Claim 1. Based on those reasons, Applicant also requests reconsideration and withdrawal of the rejection of Claims 2-8.

CONCLUSION

Claims 1-13, 31, 32, 38, and 39 are pending in the present application. Allowance of these claims is respectfully requested.

If there are any questions, please telephone the undersigned at 408-451-5907 to expedite prosecution of this case.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as FIRST CLASS MAIL in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 15, 2004.

7/15/2004
Date

Signature: Rebecca A. Baumann